



USSOCOM SBIR Successful Technology Pursuit



Innovative Technology

Topic Number | AF093-021

Topic Title | High Definition Micro Display

Helmet-mounted displays (HMDs) cannot currently provide visual acuity to the threshold level. In addition, these displays lack the required resolution, meaning that warfighters must get closer to targets than would be necessary with stronger systems. eMagin has developed a high definition Wide Ultra eXtended Graphics Array microdisplay by combining organic light emitting diode (OLED) technology with Complementary Metal-Oxide Semiconductor processes. The microdisplay features a definition of higher than 2.3 megapixels, uses 80 percent less power than liquid crystal displays (LCDs), offers 10,000:1 contrast ratio, is 1,000-1,500 times faster than LCD, has a nominal viewing angle of 160 degrees, and can operate between -46 degrees Celsius to +70 degrees Celsius without the need for heaters or coolers and is automatically stabilized over the entire temperature range. The micro display offers a large field of view while reducing the footprint of the system, as well as making it more mobile. The use of a small cable reduces wires, and eliminates electromechanical interference. This technology is currently a commercial-off-the-shelf system. The system is also compatible with night vision systems.

Company and Contact Information

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Military and Commercial Significance

The Department of Defense (DoD) funded eMagin's development of its high OLED microdisplay with a Small Business Innovation Research (SBIR) Phase II award worth over \$1.5 million.

Potential (DoD) applications include HMD systems for pilots, tankers, and dismounted combatants.

eMagin's technology has led to commercial products in the professional movie industry for broadcast cameras. This product development was a direct extension of work completed under the SBIR.

Commercial applications for the OLED microdisplay include homeland security, law enforcement, and entertainment such as television. The technology also has application in viewfinders, training and simulation, and in the medical field.

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